

Drinking Water



Drinking Water

The CDC says:

Over the last 100 years, many improvements in the health, success, and lifespan of the U.S. population can be linked to improvements in water quality. Providing safe drinking water was one of the most important public health achievements of the 20th century. Water treatment and disinfection (methods to get rid of germs or chemicals that cause illness) has helped ensure access to healthy and safe water for millions of Americans.



Drinking Water



As regulations on contaminants increase the technological advances must also increase to meet regulatory demands

Certified Water Plant Operator

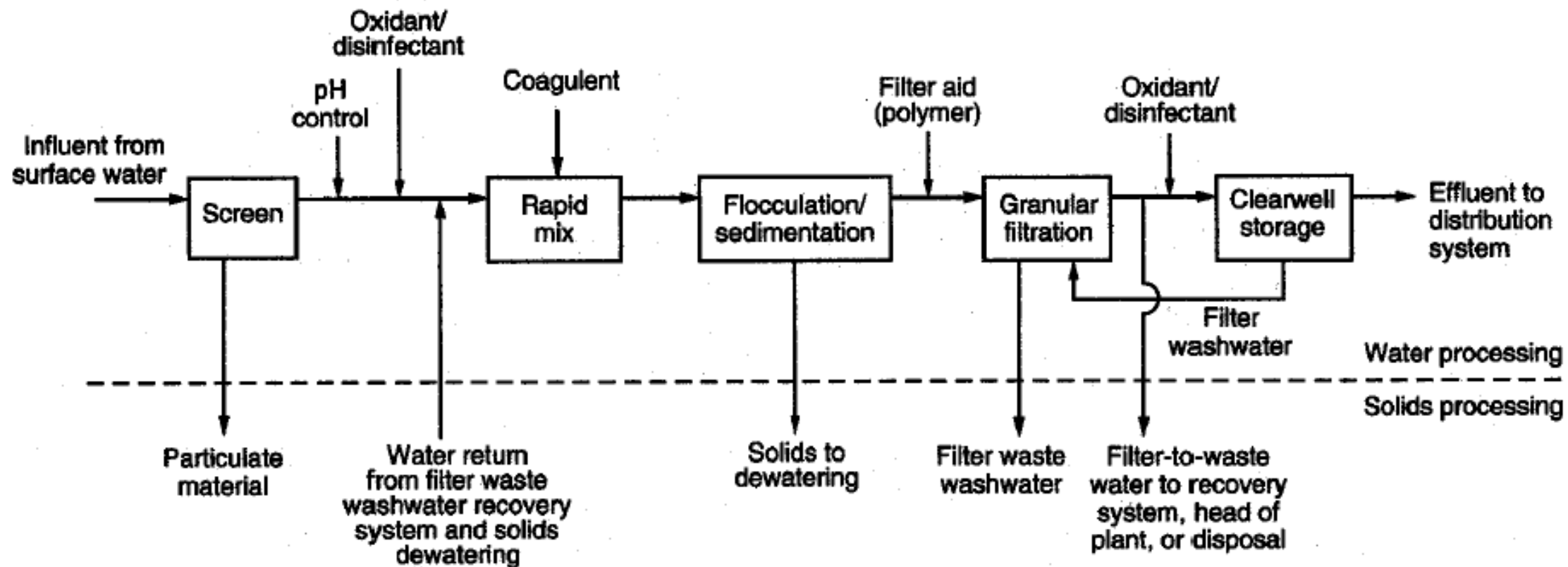
Protecting drinking water is one of the most important jobs in the world. Certified water operators are needed to perform these vital functions. Certification and ongoing training is necessary to stay up to date as new regulations and technologies emerge.



Training reinforces and advances an operator's technical knowledge, skills and abilities. It also expands an understanding of emerging technologies and best practices.

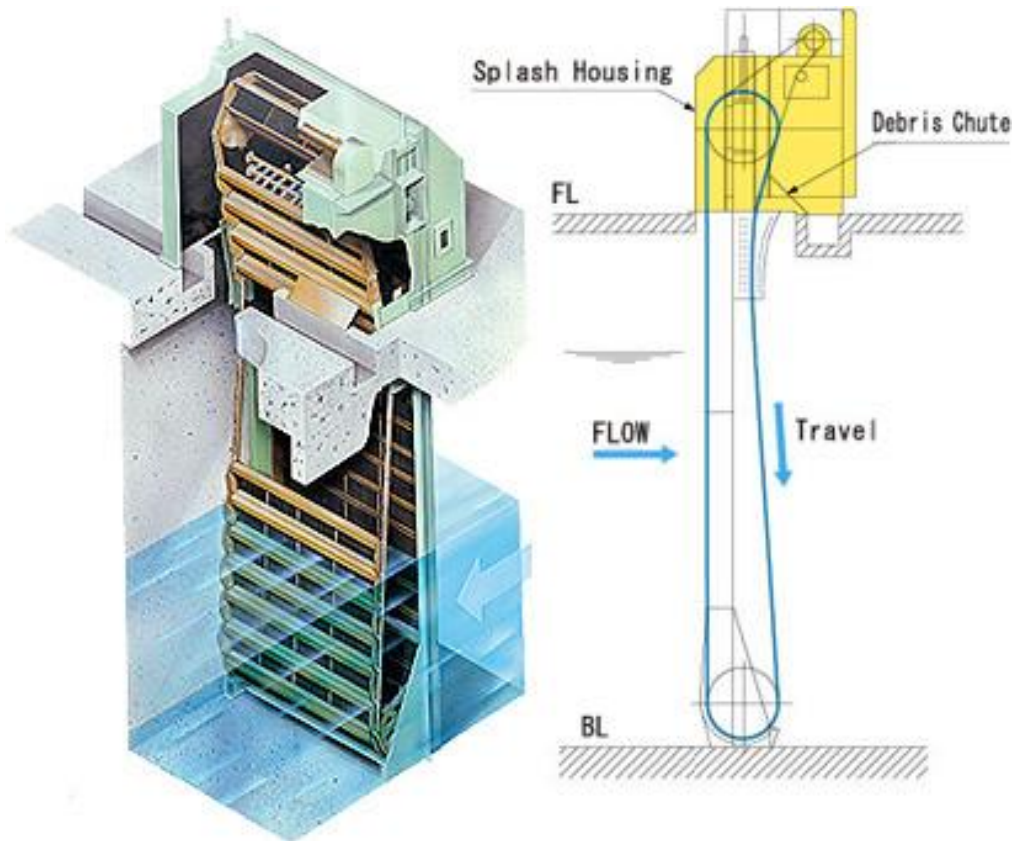


Conventional Treatment

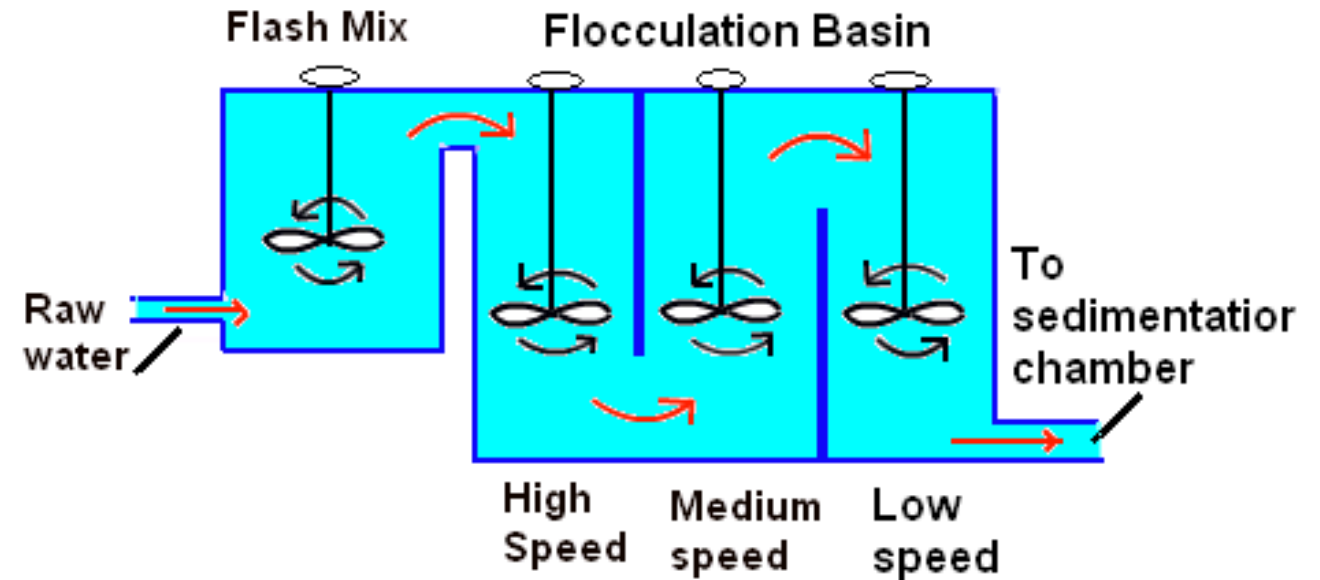


Conventional Treatment

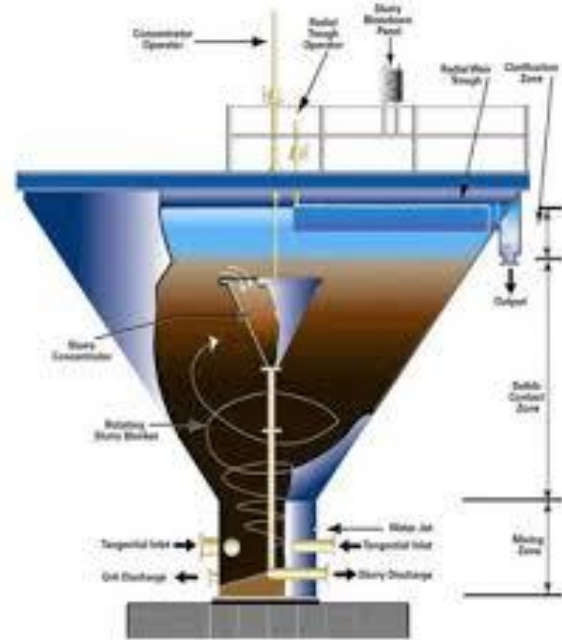
Screening



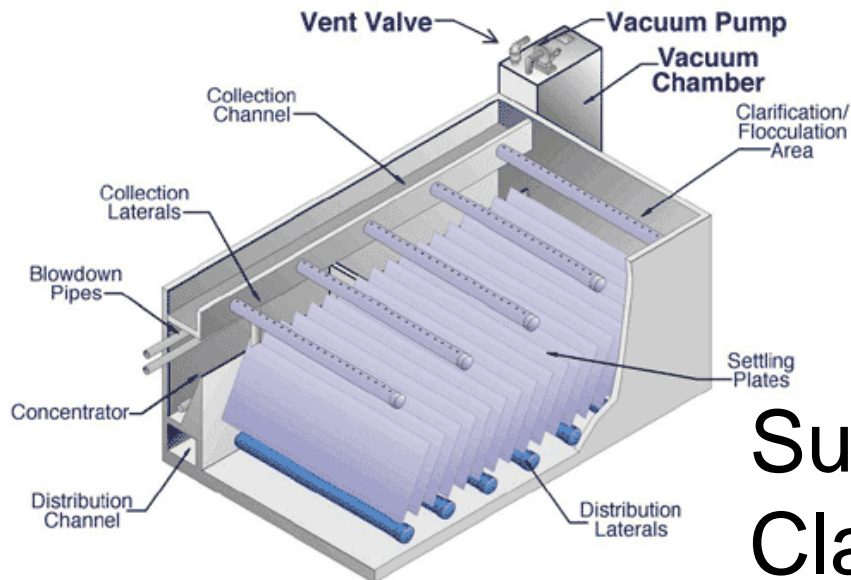
Flash Mix and Flocculation



Conventional Treatment



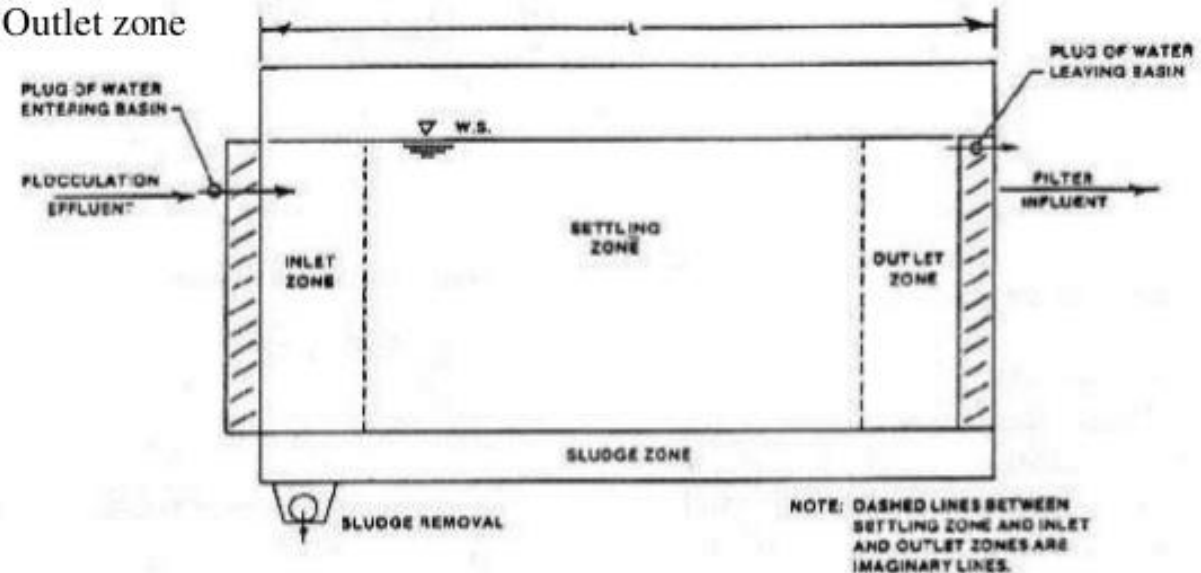
Upflow
Clarifier



Superpulsator
Clarifier

SEDIMENTATION TANK

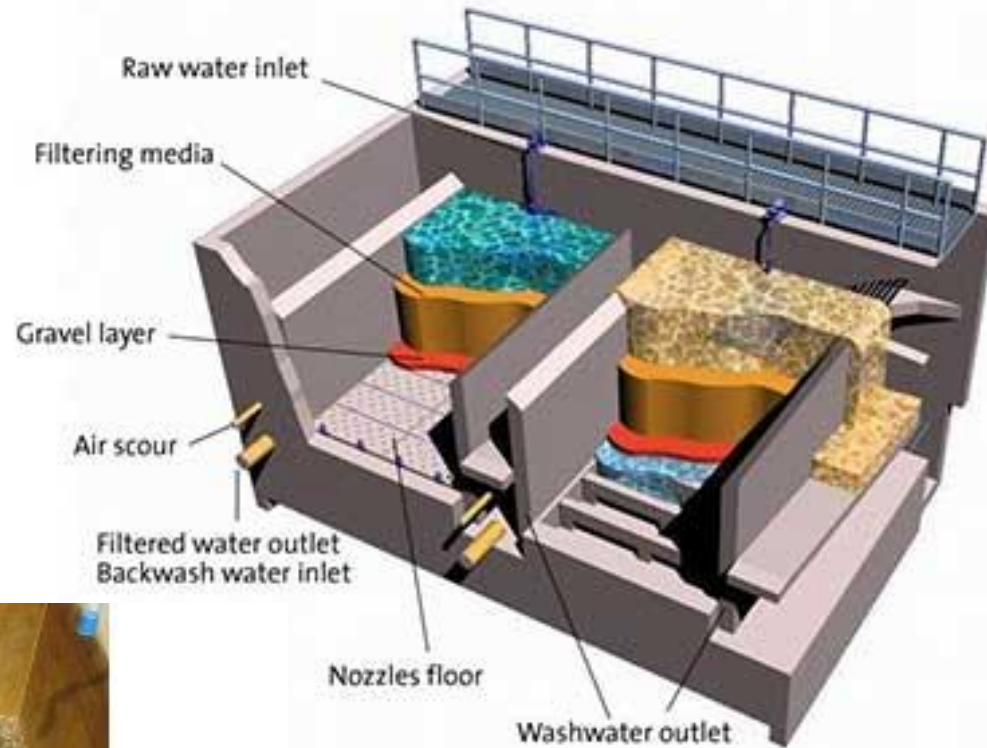
- It usually have
 - Inlet zone
 - Settling zone
 - Sludge zone
 - Outlet zone



Sedimentation basin zones

Conventional Treatment

Mixed Media Filter with air scour



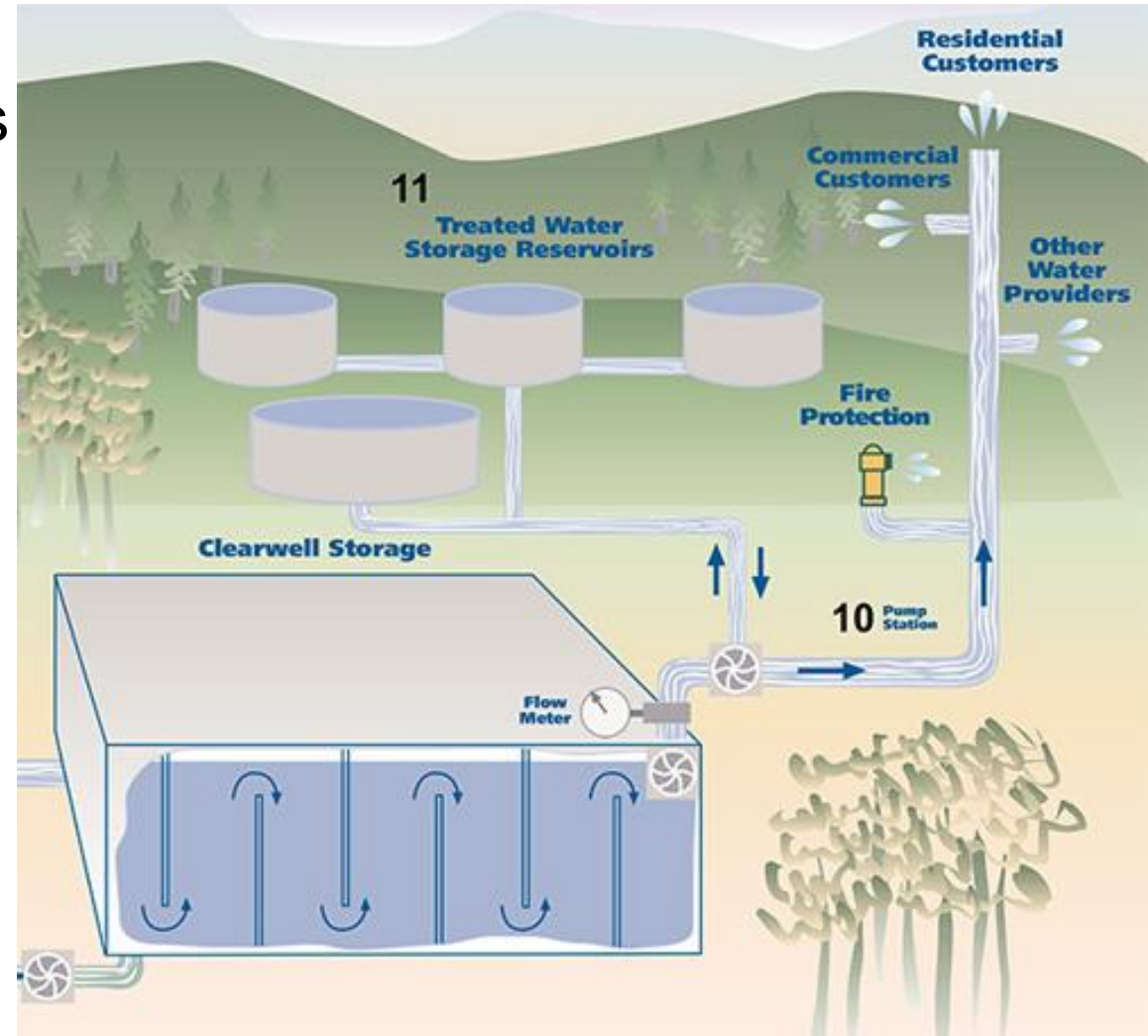
Conventional Treatment



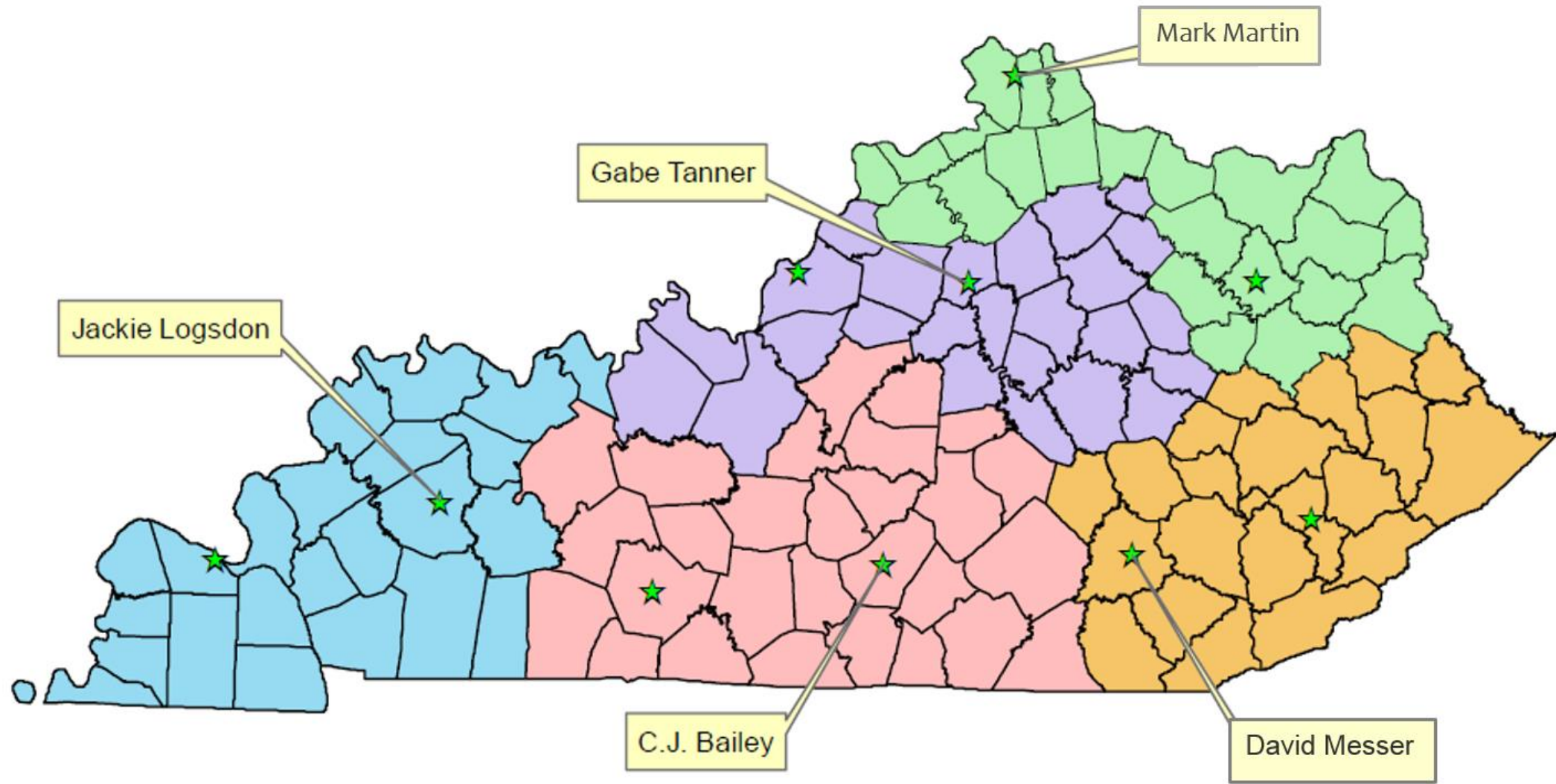
Clearwells provide time for chlorine contact



Elevated tanks provide system pressure



Technical Assistance



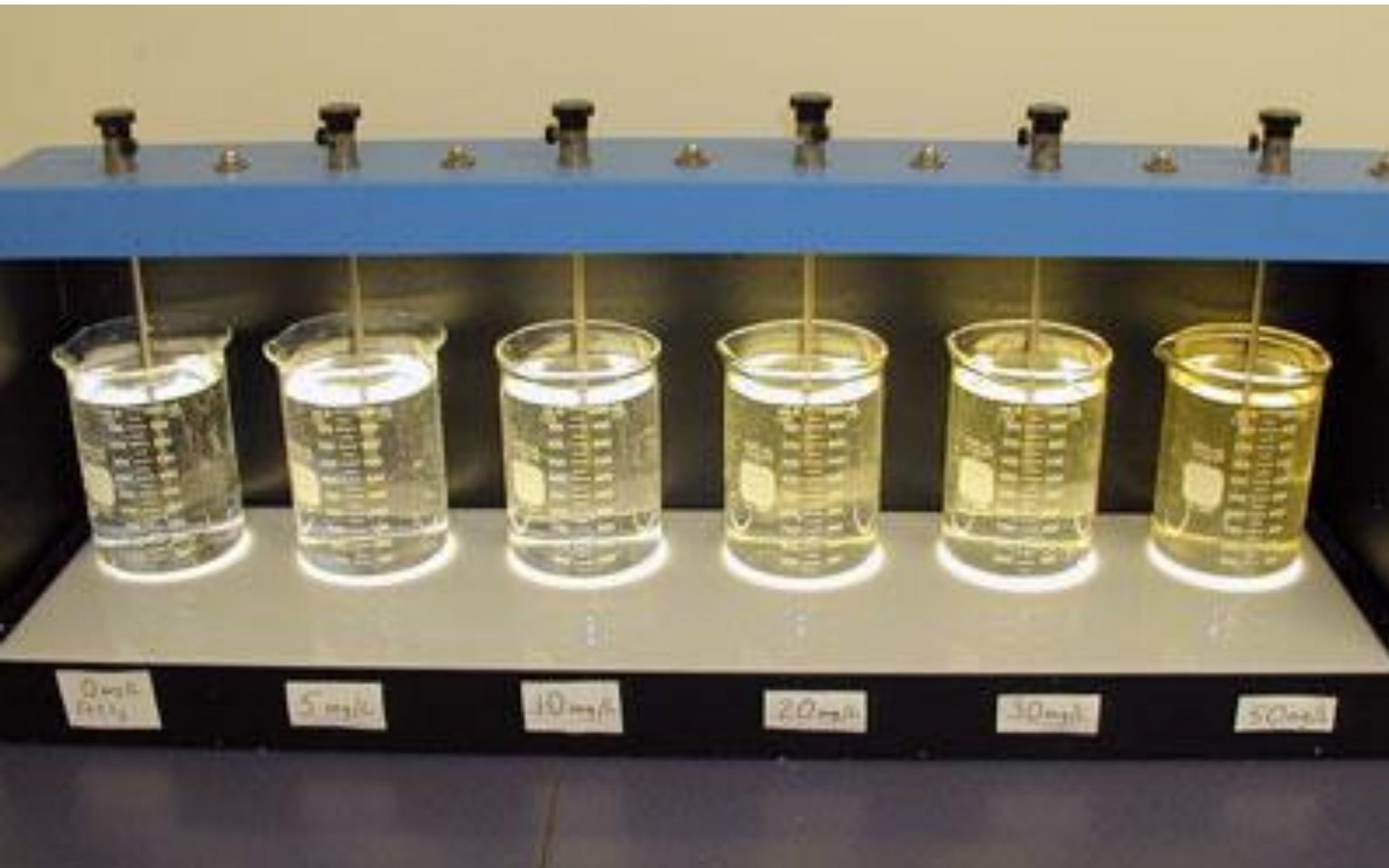
Technical Assistance

Comprehensive Performance Evaluations
Performance Based Training
Special Studies
Enhanced Coagulation
Optimization Studies
Optimal Corrosion Control Treatment
Operator education and training



Technical Assistance

Jar Testing



Technical Assistance

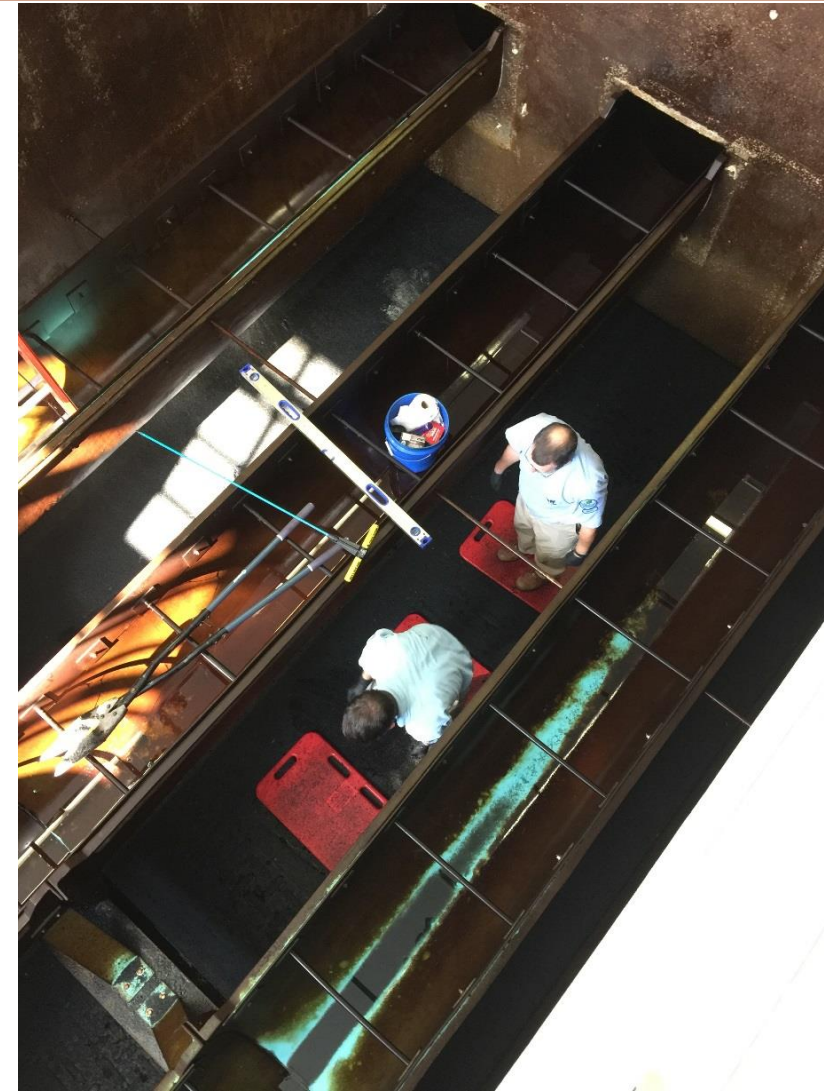
Getting In The Field

Modular DSO Training



Technical Assistance

Filter Assessment



AREA-WIDE OPTIMIZATION PROGRAM

- Kentucky started AWOP program in 1997.
- 2.54 million People received microbial optimized water in 2016, up from 222,000 in 2005.
- 57 PWS have met microbial optimization goals in 2016.
- Seventy-five percent of the surface water plants met one or both goal criteria. This is an increase from sixty-nine percent in 2015.
- Provided Distribution System Optimization Training in Madisonville, Campbellsville, Frankfort, Morehead and Hazard.
- 2017 Kicking off DBP optimization program.
- Goals lower than MCL to build in compliance buffer.
- Certificate program.



AREA-WIDE OPTIMIZATION PROGRAM

- Optimization
 - Strives for excellence beyond regulatory requirements.
 - Provides a safety factor for achieving compliance.
 - Provides increased public health protection.
 - Focuses on improving operation of existing facilities without making expensive capital improvements.
- All systems should participate.
 - No negative impacts.
 - Complete a commitment letter.
 - Submit data your probably already collecting.



AREA-WIDE OPTIMIZATION PROGRAM

Core Team Structure

The KY AWOP members (Drinking Water Technical Assistance):

- Joe Uliasz—Environmental Control Supervisor (Frankfort)
- Jackie Logsdon—Environmental Scientist IV; AWOP Coordinator (Madisonville & Paducah)
- CJ Bailey—Environmental Scientist IV (Columbia & Bowling Green)
- Gabe Tanner – Environmental Scientist IV (Frankfort & Louisville)
- David Messer—Environmental Scientist IV (London & Hazard)
- Mark Martin—Environmental Scientist IV (Florence & Morehead)



DBP Compliance Issues

SITE CHANGES

You may revise your monitoring plan to reflect changes in treatment, distribution system operations and layout (including new service areas), or other factors that may affect TTHM or HAA5 formation, or for State-approved reasons, after consultation with the State regarding the need for changes and the appropriateness of changes. **If you change monitoring locations, you must replace existing compliance monitoring locations with the lowest LRAA with new locations that reflect the current distribution system locations with expected high TTHM or HAA5 levels.** The State may also require modifications in your monitoring plan. If you are a subpart H system serving >3,300 people, you must submit a copy of your modified monitoring plan to the State prior to the date you are required to comply with the revised monitoring plan



DBP Compliance Issues



MATTHEW G. DEYER
Governor

ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION

300 SOWER BOULEVARD
FRANKFORT, KENTUCKY 40601

CHARLES G. SHAVELY
Secretary

AARON B. KEATLEY
Commissioner

TO: Kentucky Public Water Systems
FROM: Peter T. Goudmann, Director
Division of Water
DATE: March 26, 2018
Re: Implementation of Stage II Disinfection Byproduct Rule

Effective October 1, 2017 the Division of Water (DOW) commenced allowing the averaging of additional Disinfection Byproduct (DBP) sample results in order to calculate DBP concentrations required for compliance with the Stage II Disinfection Byproduct Rule. This change allows water systems to collect multiple samples in addition to the 90th day sampling set for compliance with the Stage II DBPR. This change does not require any changes to current compliance sampling practices. The collection of additional samples that better represent the concentrations of DBPs at sample sites is entirely voluntary.

Guidelines for the collection of additional samples:

- If a water system chooses to take more than one sample per quarter at a monitoring location, all samples taken in the quarter at that location will be averaged in order to determine a quarterly average and will be used in determining the Locational Running Annual Average (LRAA) calculation.
- At each resampled sample location, dual sample sets (TTHM and HAA5) are required for the Locational Running Annual Average (LRAA) of the individual sample site.
- All samples must be representative of normal water quality in your system, thus, samples that are not determined to be representative may be disallowed.

If you have any questions regarding Stage II DBPR compliance sampling or wish to collect additional samples contact Kellee Husband at 502-782-6984 (kelleem.husband@ky.gov) or Joe Uliasz at 502-782-6291 (joseph.uliasz@ky.gov).

cc: Mary Walker, EPA Region IV
Gary Larimore, KRWA
Annette DuPont-Ewing, KMUA
Kim Padgett, RCAP



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DBP Compliance Issues

CALCULATING LRAA

Systems required to monitor quarterly, must calculate LRAAs for TTHM and HAA5 using monitoring results collected and determine that each LRAA does not exceed the MCL. If you fail to complete four consecutive quarters of monitoring, you must calculate compliance with the MCL based on the average of the available data from the most recent four quarters. **If you take more than one sample per quarter at a monitoring location, you must average all samples taken in the quarter at that location to determine a quarterly average to be used in the LRAA calculation.**



DBP Compliance Issues

OEL

If you exceed the operational evaluation level, **you must conduct an operational evaluation and submit a written report of the evaluation to the State no later than 90 days after being notified of the analytical result that causes you to exceed the operational evaluation level.**

PN and CCR Compliance Issues

Public Notice

- 1) Sign and DATE the green certified mail cards- that is how I know when exactly the system received the NOV, giving me an accurate time to start the time clock (30 days or 1 year). Otherwise I count 5 days out from the time the NOV was mailed to the system.
- 2) DATE the PN CERT with dates of distribution. I cannot close the PN schedule without them.
- 3) Remember you can utilize the “What is being done section” to justify rate increases, funds needed to enhance the system, or build a new plant. Market your system and comfort your consumers even though you are telling them about an issue that the system has encountered.
- 4) Keep track of when your year is up on Tier 3 violations. Numerous Public Notices are being submitted late, through the CCR. That results in an automatic Public Notice violation.



PN and CCR Compliance Issues

- 5) You have 10 days from the time any PN is distributed, to submit the complete PN package to the Primacy.
- 6) Do not need to PN for PN violations, CCR violations, MOR violations- double check the remedial measures on the NOV. You only need to submit anything that is missing and detail the violation in the CCR's Violation Statement List.
- 7) I have been sending out lists of open PNs and violations, work with me to get them cleared.
- 8) Every violation has a point value and once a system reaches 11 points, they are referred to the Division of Enforcement, where they will enter either an Agreed Order or a Demand Letter. Penalties will be assessed.
- 9) Black out/redact any personal information (addresses, account numbers, names) on bills sent in with both PN and CCR packages.



PN and CCR Compliance Issues

Consumer Confidence Report

- 1) Annual Deadlines- **April 1st**, unless contract agreeing to a different date (Data to purchasers). **July 1st**, CCR submitted to both consumers and the Primacy no later than that date. Make sure to have CCR package in the mail before July 1st.
- 2) Violation statements- detail what the violation was for, when it was for, efforts to correct it, and if an MCL, the health effects language
- 3) Dates on Certifications- fill out the Cert with a date or a range of dates, not just month and year
- 4) Good Faith Efforts are meant to be varied and should make an honest effort to reach non-billed consumers i.e. people that work in the city but don't live there, college students, retirement homes, apartment complexes. ***** If they don't get a bill, they most likely won't be at the water office, make more effort.**



PN and CCR Compliance Issues

- 5) Electronic Delivery- **DOUBLE CHECK THE URL** before sending it out and ensure that it has language of how to receive a paper copy, not just the URL
- 6) Most mistakes are made in the efforts of delivering CCR, Certifying it, and in the violation statement list (include all violations received during the year the CCR covers).
- 7) CCRs can be used as a vehicle for delivering Tier 3 Public Notices, so make sure the PN is completed by the one year time line for that PN and that the whole package is submitted to state no later than 10 days after distributing CCR. Think of the CCR the same as a bill card and you are using it to distribute the PN.
- 8) Updates, verifying information will be coming out before the next CCR season, I will provide a quick facts guide, and am currently distributing the CCR handbook and other resources to anyone that wants them.



Monthly Operating Report Issues

PWSID: 0
 PLANT ID: 0

REPORT MONTH/YEAR: 01/1900

APPLICABLE TO ALL PLANTS

PAGE 5 OF 11

*Please answer Y/N question below this chart.

ANALYTICAL RESULTS (mg/L OR PPM UNLESS OTHERWISE SPECIFIED)											
DAY	FLUORIDE		IRON		MANGANESE				Lowest Daily Chlorine Residual Plant Tap On-Line Chlorine Analyzer	RAINFALL INCHES	WATER TEMP. DEGREES F°/C°
	RAW	TAP	RAW	TAP	RAW	TAP	RAW	TAP	FREE / TOTAL		
1											
2											
3											

Groundwater systems :

Put the lowest daily chlorine residual plant tap data on page 5 of the MOR. Several groundwater systems only put this information on page 3 of the MOR.

Monthly Operating Report Issues

ENTRY POINT RESIDUAL DISINFECTANT CONCENTRATION	
APPLICABLE TO ALL PLANTS	
ANALYTE CODE <u>0999</u>	
Number of days of plant operation	<u>0</u>
Were samples taken each day of operation? (Y/N)	<input type="checkbox"/>
Number of lowest chlorine samples recorded	<u>0</u>
Lowest single chlorine reading	<u>0.00</u>
If less than required:	
Was residual restored within 4 hours of plant operation? (Y/N)	<input type="checkbox"/>
<u>Free Chlorine</u> (for all disinfectants except chloramine):	
Number of samples under 0.2 mg/L	_____
<u>Total Chlorine</u> (when disinfectant is Chloramine):	
Number of samples under 0.5 mg/L	_____

Groundwater systems:

Ensure the entry point residual disinfectant concentration (EPRD) section of the 1st summary sheet is completed.

Monthly Operating Report Issues

Surface water systems: read the individual filter effluent turbidity (IFE) section of the MOR carefully and indicate “yes” or “no” for each question as it applies to your system.

- When the recording part of the continuous monitoring equipment is not functional, this counts as a failure in the continuous monitoring equipment.
- When there is a failure of the continuous monitoring equipment, collect grab samples every 4 hours and repair the monitoring equipment within 5 working days for populations 10,000 or more. Water systems with a population under 10,000 must have the monitoring equipment repaired within 14 working days.

INDIVIDUAL FILTER EFFLUENT TURBIDITY	
APPLICABLE TO ALL PLANTS WITH FILTRATION	
ANALYTE CODE <u>0100</u>	
Was each filter monitored continuously? (Y/N)	<input type="checkbox"/>
Were measurements recorded every 15 minutes? (Y/N)	<input type="checkbox"/>
Was there a failure of the continuous monitoring equipment? (Y/N)	<input type="checkbox"/>
If Yes, (1) were individual filter effluent turbidity grab samples collected every four hours of operation? (Y/N)	<input type="checkbox"/>
(2) was the continuously monitoring equipment repaired within 5 working days? (Y/N)	<input type="checkbox"/>
Was individual filter level greater than 1.0 NTU in two consecutive measurements? (Y/N)	<input type="checkbox"/>
Was individual filter level greater than 0.5 NTU in two consecutive measurements after on line for more than four hours? (Y/N)	<input type="checkbox"/>
Was individual filter level greater than 1.0 NTU in two consecutive measurements in three consecutive months? (Y/N)	<input type="checkbox"/>
Was individual filter level greater than 2.0 NTU in two consecutive measurements in two consecutive months? (Y/N)	<input type="checkbox"/>
If any of the last 4 boxes are YES, fill out the Individual Filter Turbidity Sheet and submit with the MOR	



Monthly Operating Report Issues

All public water systems:

Submit the Annual Water System Data form [DOW0801](#) with the December MOR (2018 Annual Water System data should be submitted with the December 2018 MOR). The water sold section is independent of the consecutive system section on the Annual Water System form.

DOW Form 0801

April 2017

PWS ID : 0
PLANT ID: 0
AGENCY INTEREST: 0

ANNUAL WATER SYSTEM DATA APPLICABLE TO ALL WATER SYSTEMS

TO BE SUBMITTED WITH DECEMBER MOR

NUMBER OF METERS:

SYSTEM POPULATION: _____

RESIDENTIAL: _____

COMMERCIAL: _____

INDUSTRIAL: _____

TOTAL POPULATION SERVED IN CONSECUTIVE
SYSTEMS: (REFER TO TABLE BELOW) _____

CONSECUTIVE SYSTEM POPULATIONS:

(INFORMATION ON THE SYSTEMS/AREA TO WHOM YOU SELL WATER)

PWSID #	# OF METERS	PWSID #	# OF METERS

WATER SOLD (Gallons)

Residential	
Commercial	
Industrial	
Wholesale	



Revised Total Coliform Rule Issues

Total Coliform Sampling

Do not sample from the same sites from week to week to month after month. Rotate sampling locations to represent the whole distribution system.

141.21 Coliform sampling.

Routine monitoring: Public water systems must collect total coliform samples at sites which are representative of water throughout the distribution system according to a written sample siting plan. These plans are subject to State review and revision.

The public water system must collect samples at regular time intervals throughout the month



Revised Total Coliform Rule Issues

RTCR Assessment Triggers:

You have to do a Level 1 Assessment if you:

1. Fail to collect and analyze at least 3 repeat samples for each routine TC+; or
2. Have two or more TC+ samples (use routine and repeat results in your calculation) in one month.

A Level 2 Assessment is triggered if you have either:

1. E. coli MCL violation:
2. Two Level 1 triggers in a rolling 12-month period or for systems on annual monitoring, a Level 1 trigger in two consecutive years.



Most Common Violation



Questions



Contact Information

Joe Uliasz, Supervisor

Drinking Water Compliance and Technical Assistance Section

Division of Water

(502)-782-6291, joseph.uliasz@ky.gov

